



ESRI California | Hawaii | Nevada

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Best Practices for Creating Web Maps

Brian Chong

Justin Fan



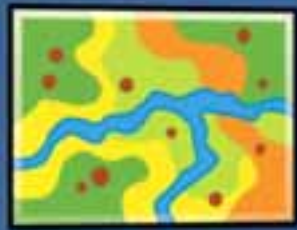
Agenda

- Overview of web maps
- Designing maps for the web
- Develop effective web maps



What is a Web Map?

- Contains one or more GIS services
- Integrated in a web application

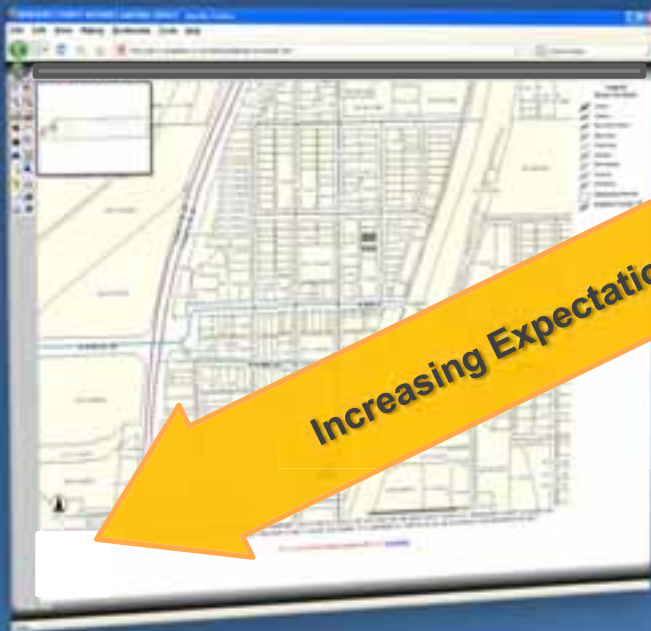


...accomplishes a focused, meaningful task

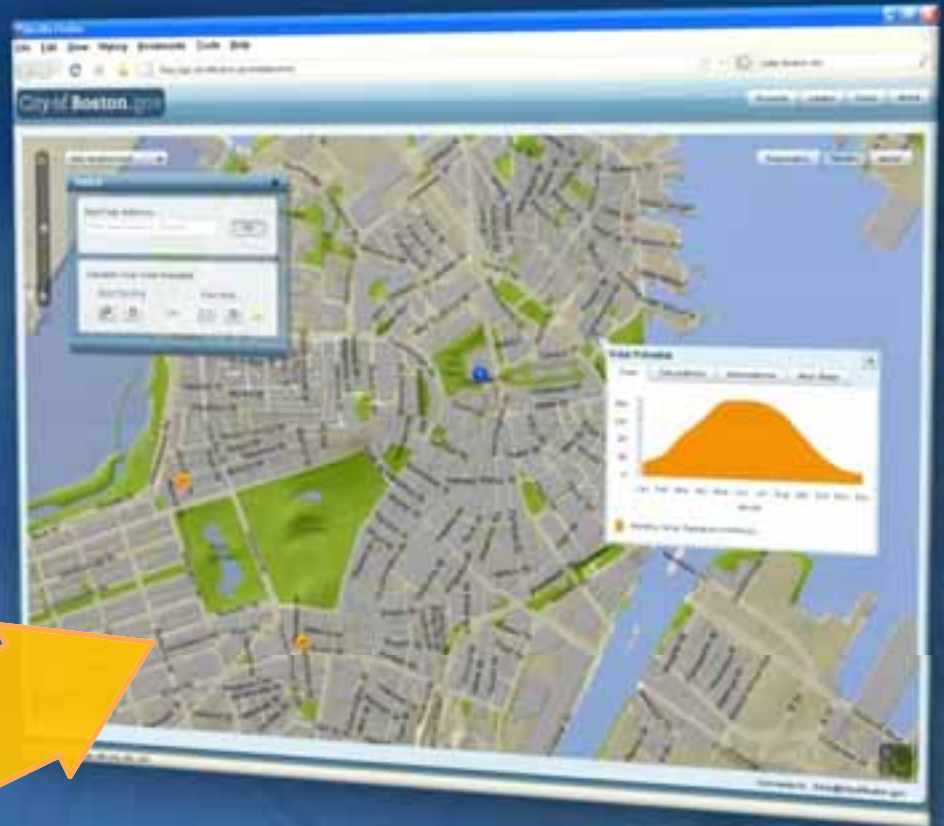
Growing expectations

New era of Web maps

- Consumer mapping sites have raised the bar
- “One-size fits all” Web map will not work



Increasing Expectations



Change the way we design

High quality user experience

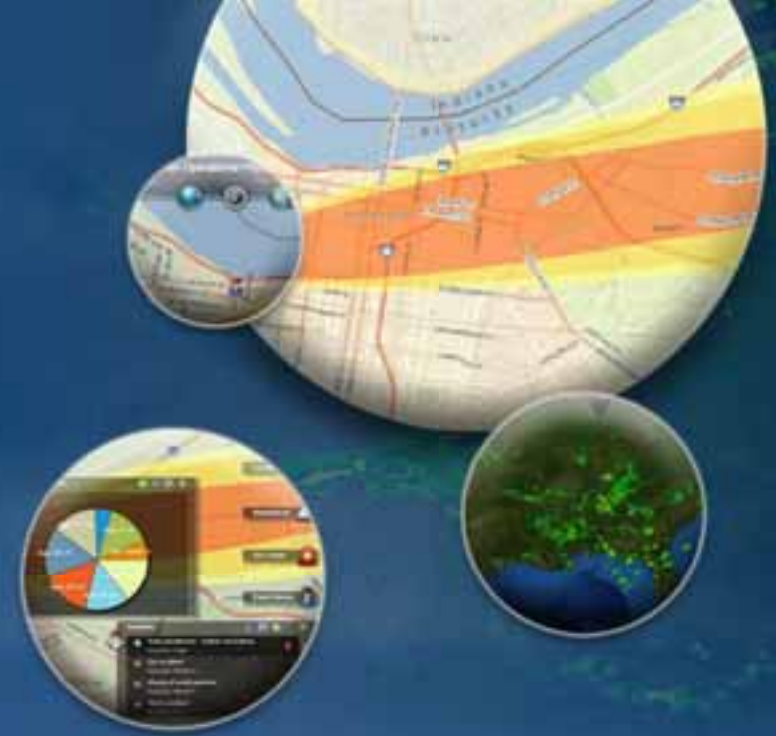
- 85% of visitors abandon a new site due to poor design
*Gartner
- 40% of repeat visitors do not return due to a negative experience
*Zona Research



...usability trumps features

A Great Web Map is..

- Easy and intuitive to use
- Responsive and designed for the end user
- Extremely focused



...meets users expectations



Demonstration



Considerations for your Web map

Careful Planning

- What is the purpose of the application?
- What business problem will it solve?
- Who are the end users?
- Will this be an internal or public-facing Web site?
- Which data do you need to include?



Designing Maps for the Web

Best Practices and Patterns

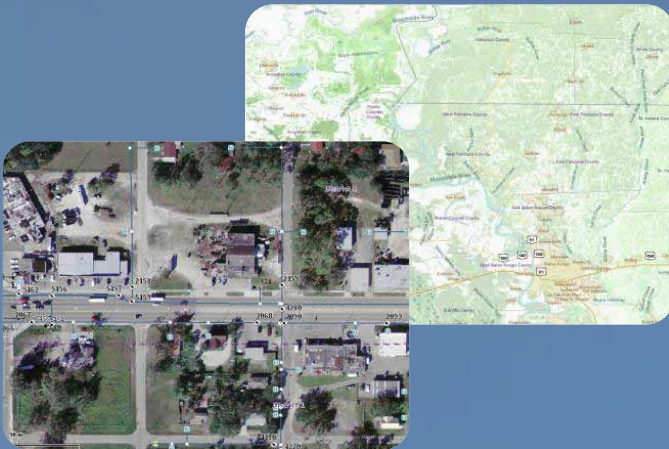
Organize Data

Basemaps

Geographic frame of reference

Contain static vector and raster data

Reusable in multiple applications



Operational Layers

Show a focused item of interest

Support functionality of the application

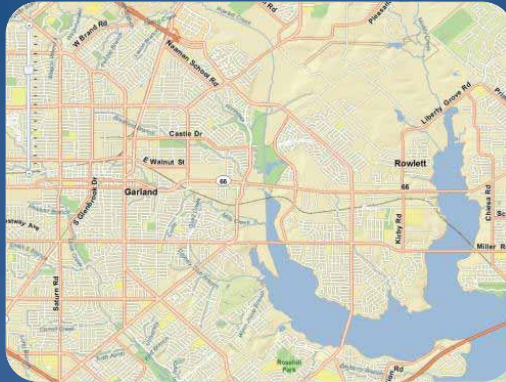
Displayed on top of basemap



Basemaps

Provide geographic reference

- Consider using ArcGIS Online



Street Map



Topo Map



Imagery



City Map

- Use your own resources – your authoritative data

Map templates

Excellent starting point

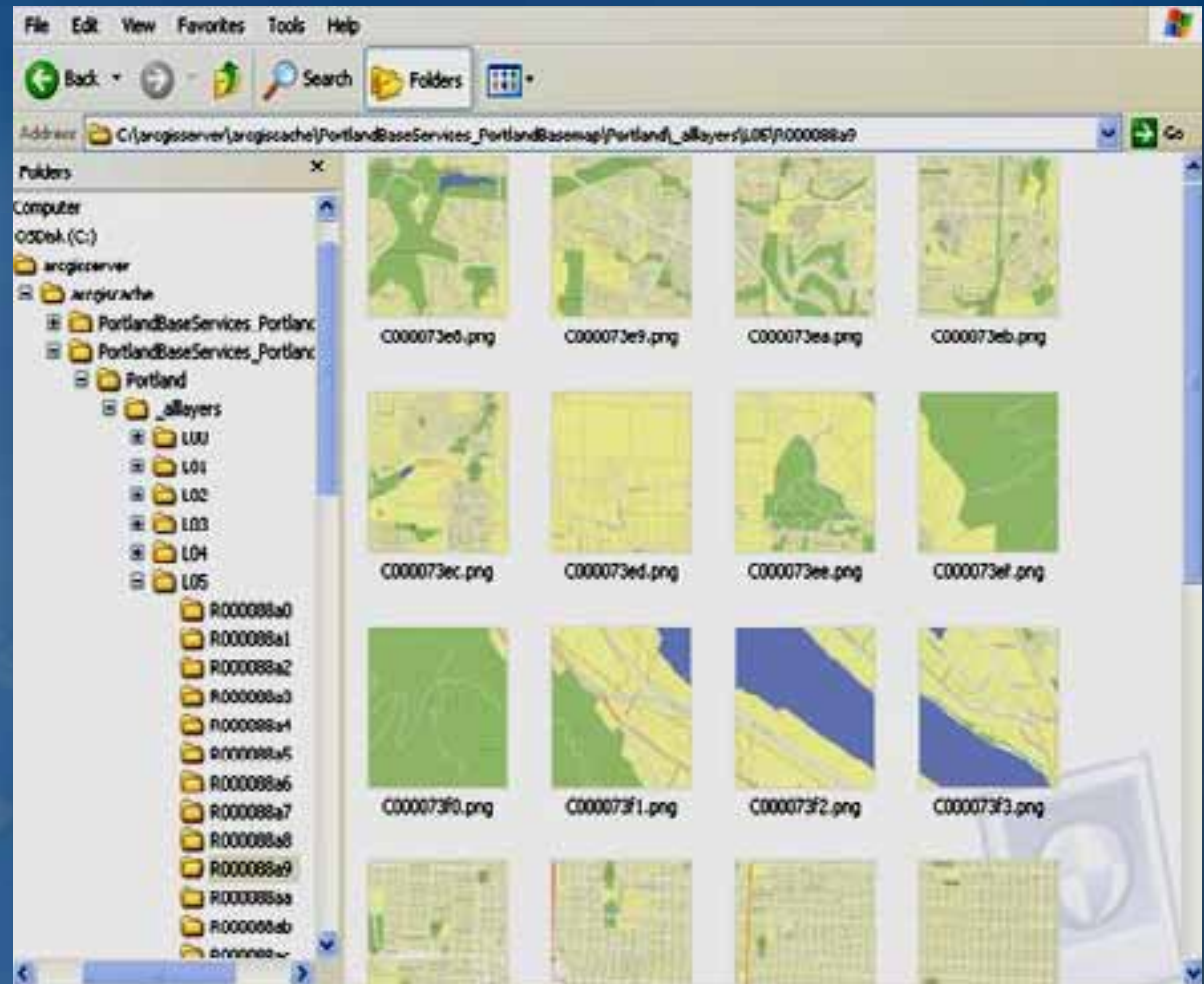
- Transfer of map design
- Captures best practices
- Focused design



...for you to create useful and attractive maps

Benefits of map caching

- Best performance
- Improved scalability
- More options for cartography



Working with a map cache

Best practices

- Choose appropriate image output type
 - Raster cache: JPEG (.JPG)
 - Vector cache: PNG
- Match scale dependency levels with cache levels
- Use same projection for all services
- Create a test cache using a small area

Operational layers

Application focus

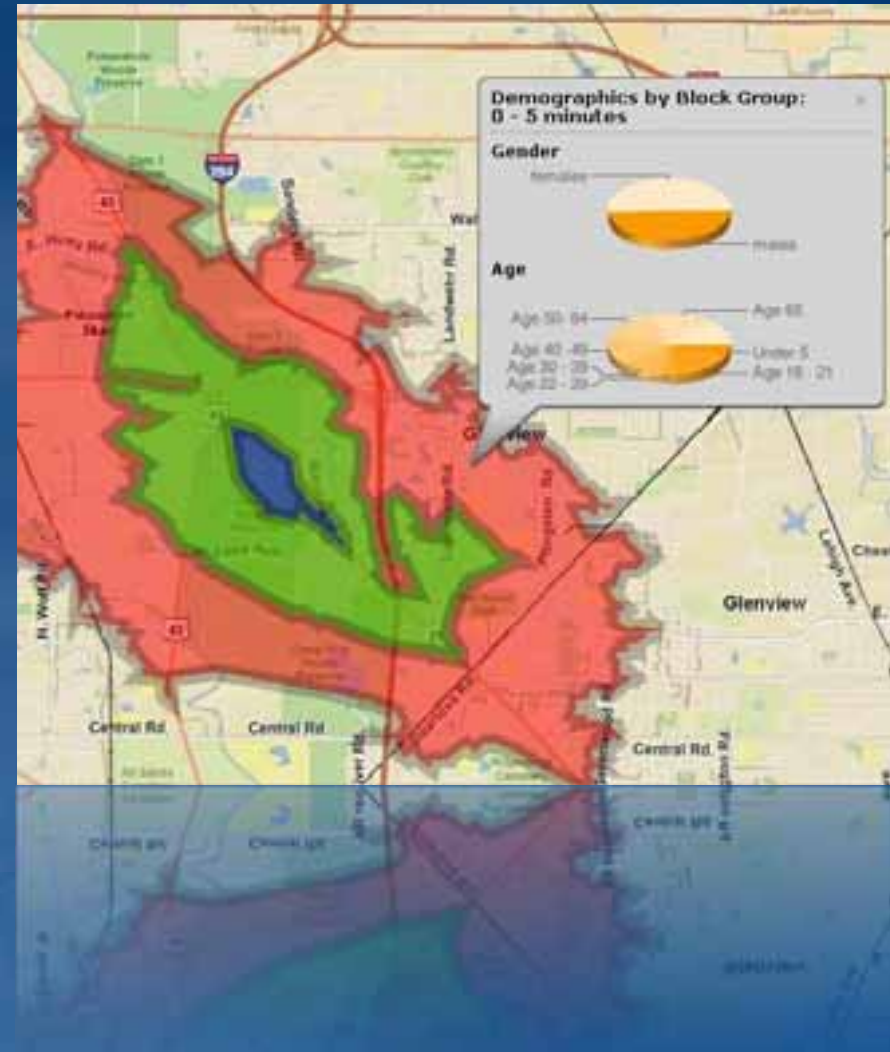
- Assets, incidents, work orders
- Query or computation results
- Result layers derived from geoprocessing



Operational layer display

Choose the best option

- Dynamic map layers
 - Real-time data
 - Frequently changing data
- Cached map layers
 - High volumes of traffic
 - Do not change often
- Information popups



Optimized map services

- High performance drawing engine
- Best performance and quality for dynamic maps
- Improve map caching performance
- Uses a map document (.MXD) to create a map service definition file (.MSD)

Map (.mxd)

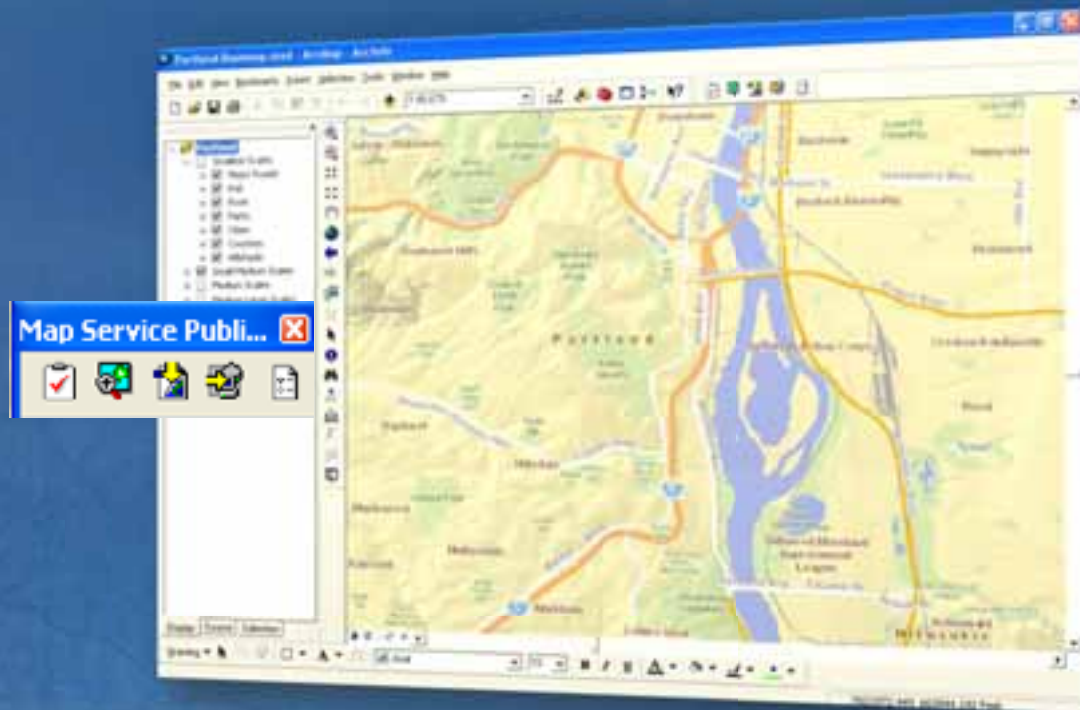


Map (.msd)



Map Service Publishing toolbar

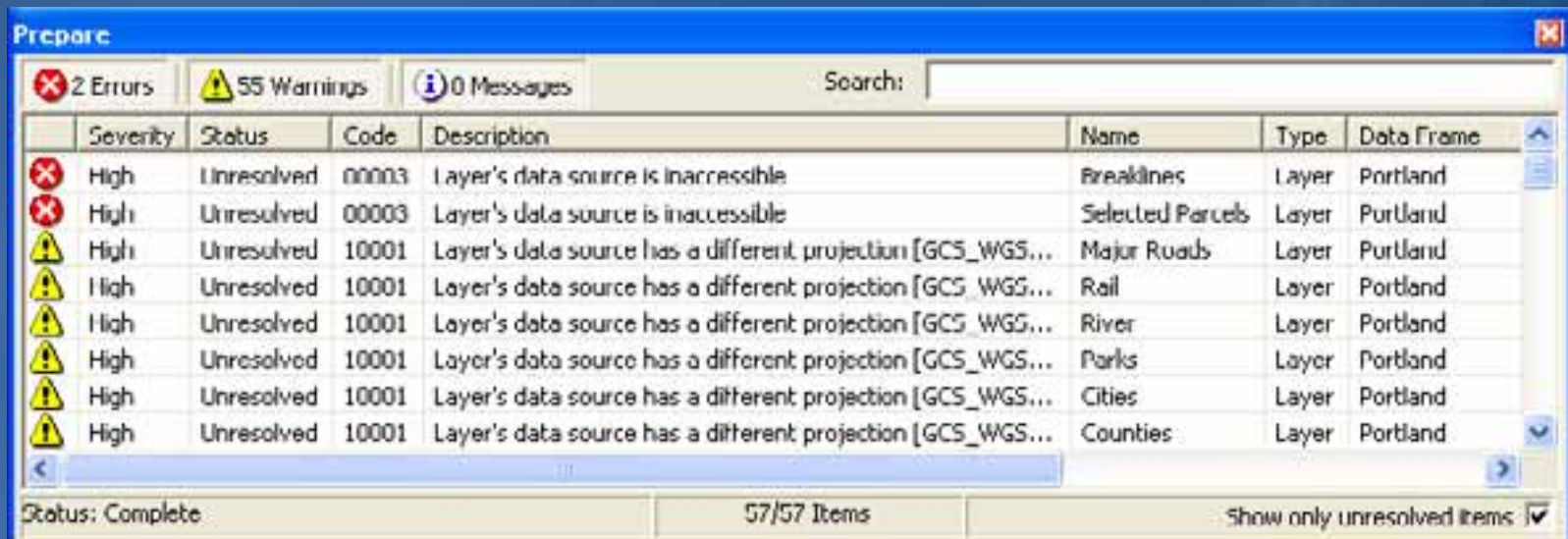
- Identify layers or issues that may degrade performance
- Analyze and preview in ArcMap



Analyze the map

Improve performance

- Discover content affecting performance
- Review results: errors, warnings, and messages
- Preset solutions available in the analysis tool



The screenshot shows the 'Prepare' window of a GIS application. It features a summary bar at the top with '2 Errors' (red X icon), '55 Warnings' (yellow triangle icon), and '0 Messages' (blue i icon). Below this is a table listing the specific issues. The table has columns for Severity, Status, Code, Description, Name, Type, and Data Frame. The first two rows are errors (High severity, Unresolved status) related to inaccessible data sources for 'Breaklines' and 'Selected Parcels'. The remaining seven rows are warnings (High severity, Unresolved status) related to different data source projections for 'Major Roads', 'Rail', 'River', 'Parks', 'Cities', and 'Counties'. The status bar at the bottom indicates 'Status: Complete', '57/57 Items', and a checked box for 'Show only unresolved items'.

	Severity	Status	Code	Description	Name	Type	Data Frame
✖	High	Unresolved	00003	Layer's data source is inaccessible	Breaklines	Layer	Portland
✖	High	Unresolved	00003	Layer's data source is inaccessible	Selected Parcels	Layer	Portland
⚠	High	Unresolved	10001	Layer's data source has a different projection [GCS_WGS...	Major Roads	Layer	Portland
⚠	High	Unresolved	10001	Layer's data source has a different projection [GCS_WGS...	Rail	Layer	Portland
⚠	High	Unresolved	10001	Layer's data source has a different projection [GCS_WGS...	River	Layer	Portland
⚠	High	Unresolved	10001	Layer's data source has a different projection [GCS_WGS...	Parks	Layer	Portland
⚠	High	Unresolved	10001	Layer's data source has a different projection [GCS_WGS...	Cities	Layer	Portland
⚠	High	Unresolved	10001	Layer's data source has a different projection [GCS_WGS...	Counties	Layer	Portland

Status: Complete 57/57 Items Show only unresolved items ☒

Preview the map

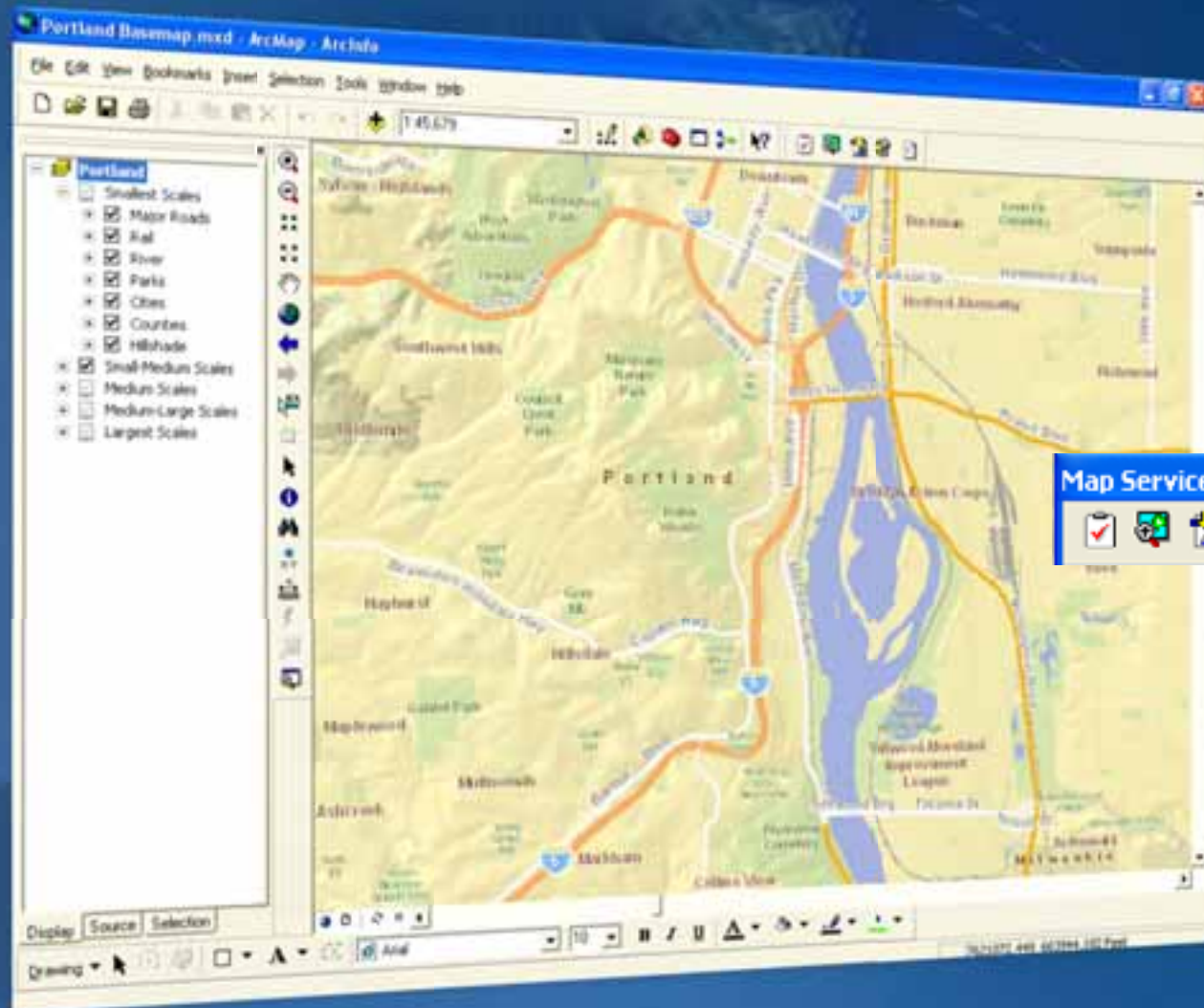
Improve performance

- Assess drawing performance and graphic quality before publishing



Demonstration

Map Service Publishing toolbar



Performance tips

Map documents

- Complex things do not scale — keep map documents as simple as possible
- Use common projection for all data layers
- Remove unused layers
- Use scale dependencies
- Avoid nested services

Performance tips

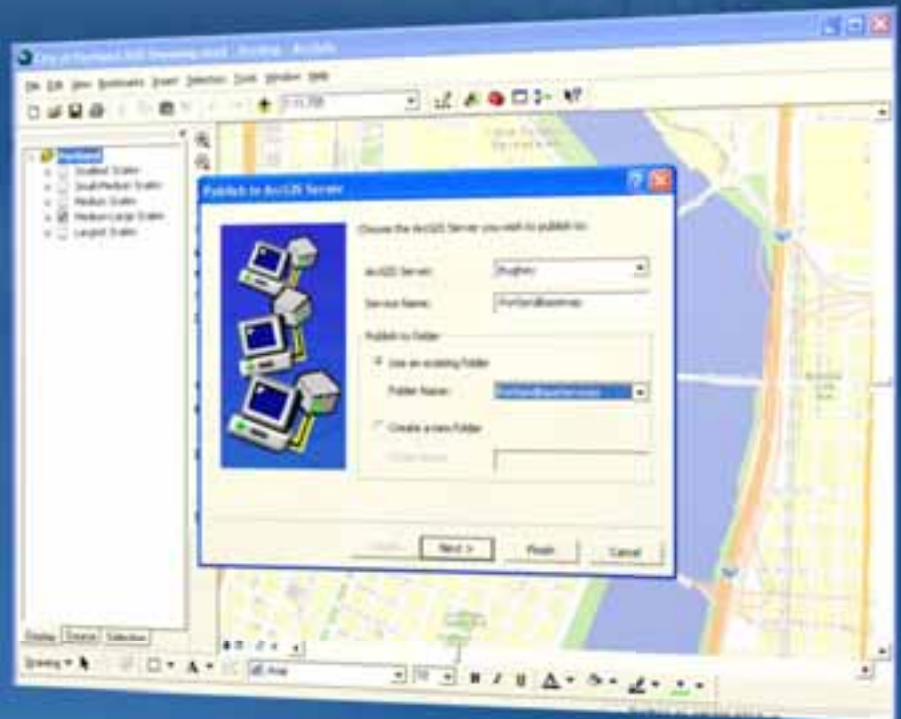
Database

- Optimize and tune your database
- Use direct connect
- Avoid UNC paths for file-based data
- Use spatial and attribute indexes

Publishing optimized map services

Two options

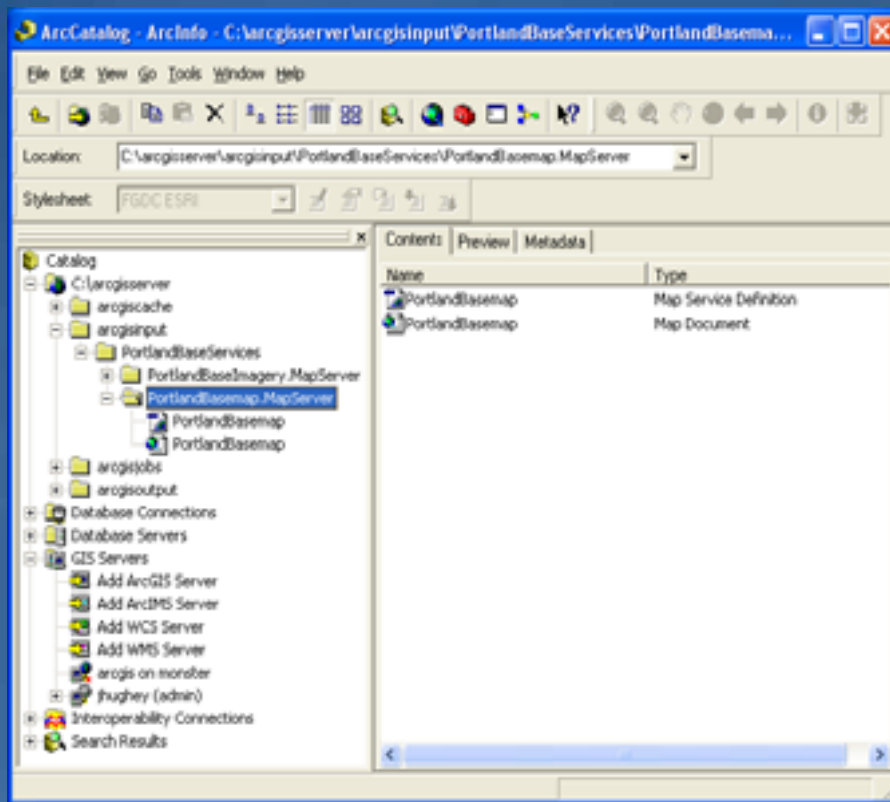
- **Desktop Users**
 - Save map service as an MSD
 - Administrator publishes map service
- **Server Administrators**
 - Publish directly from ArcMap



Managing optimized map services

Best practices

- **Store your MSD and MXD together**
 - Do not delete the MXD



Need to make changes?

- Layer properties
- Layer cartography
- Remove or add layer



Change the original MXD

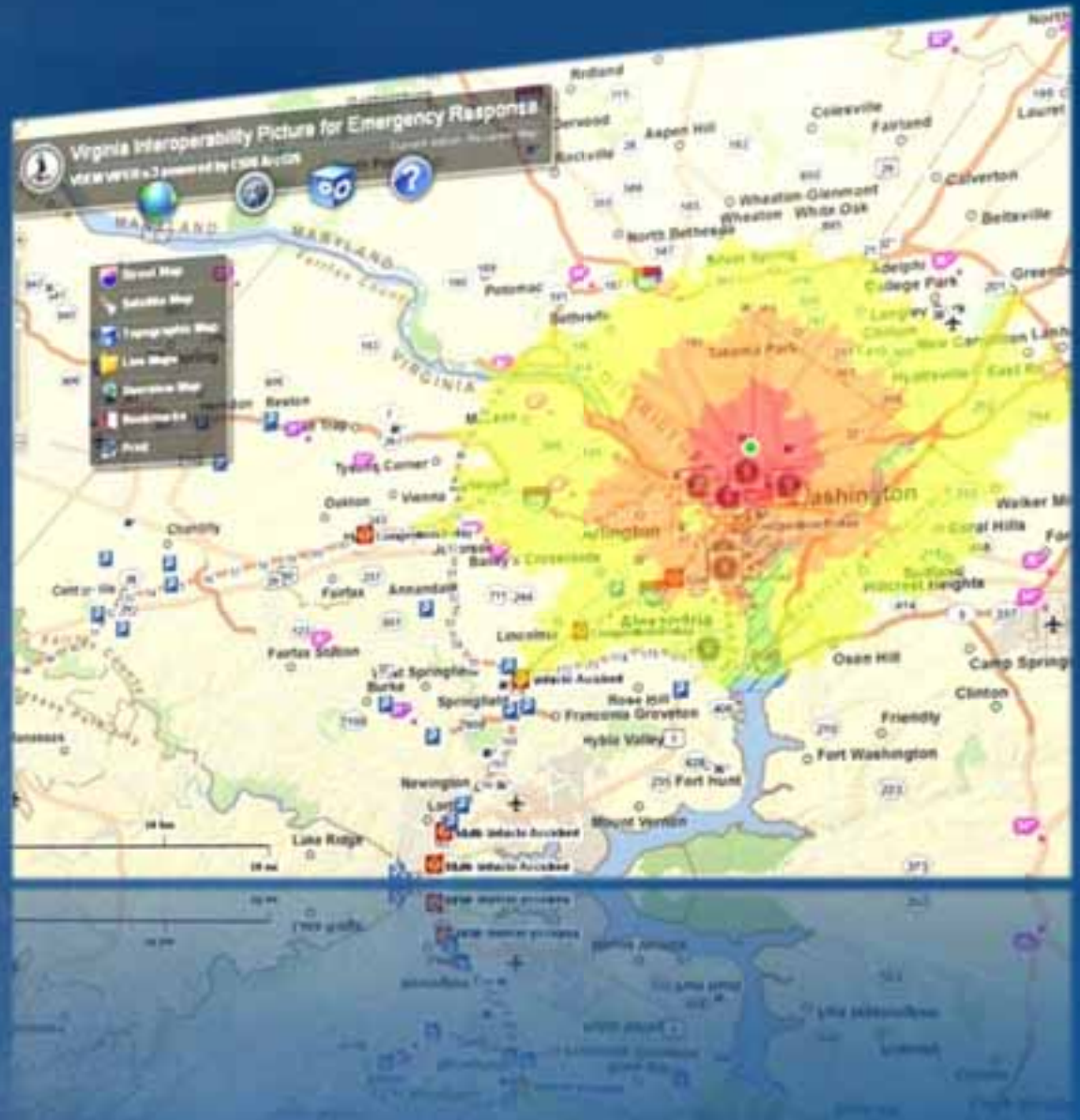
- Resave the MSD
- Restart the service

Develop effective Web Maps

Building Web applications

A systematic approach

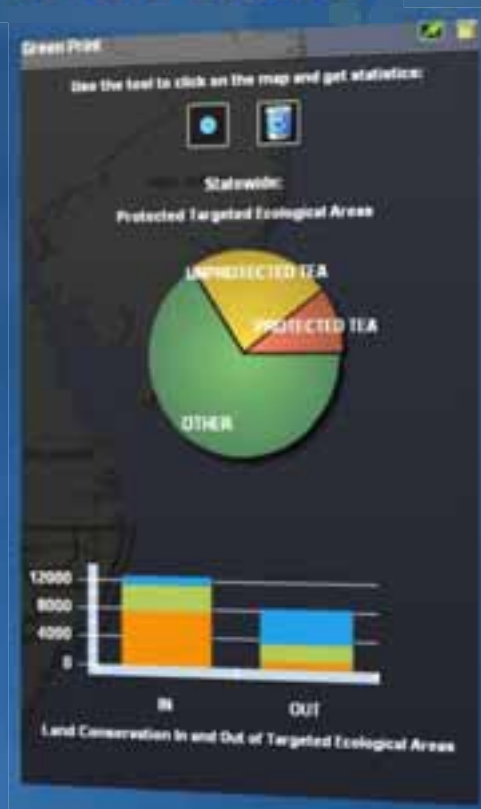
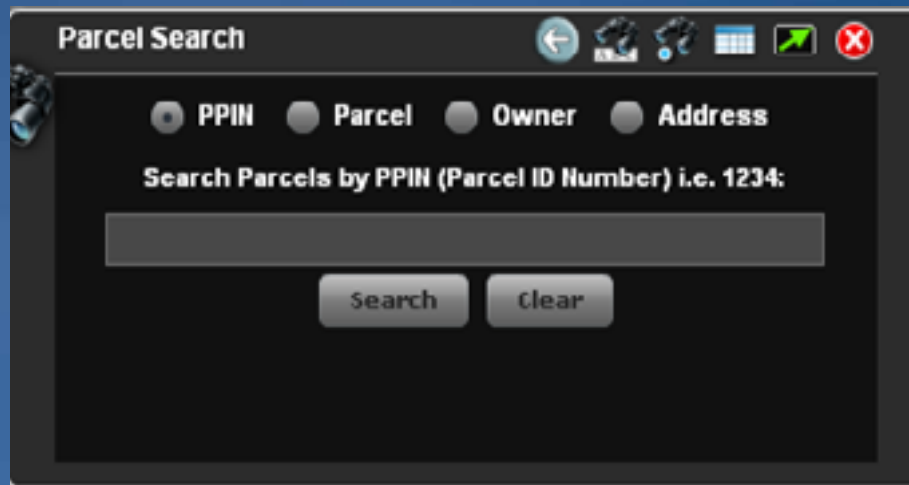
- Map layers
- Tools and tasks
- Reporting



Tools and tasks in Web applications

Best practices

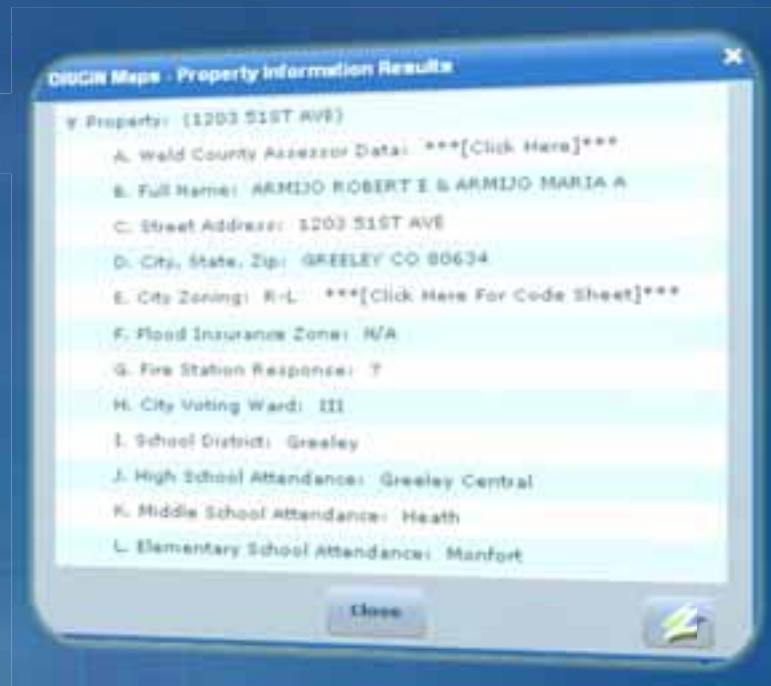
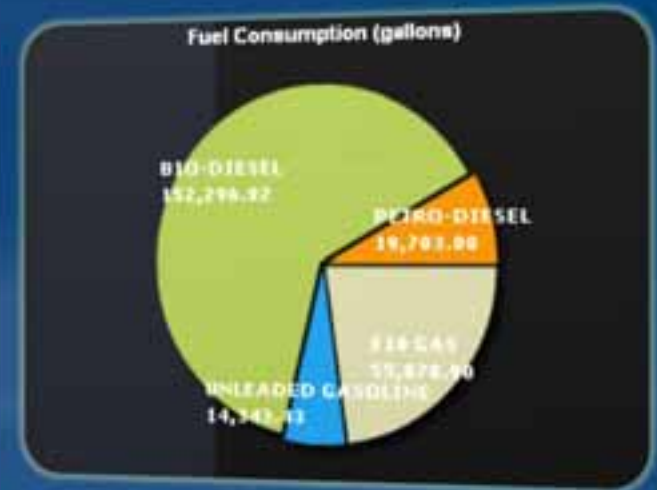
- Design tools for end users
- Design tools for specific layers
- Functionality does not have to be a button on the toolbar



Reporting information in Web applications

Best practices

- Eliminate GIS terminology
- Target report to end user
- Choose best option
 - Map labels
 - Information popup
 - Results of geoprocessing task
 - Client-side charts



Sample viewers

Jump start to application design

- Configurable solutions
- Quick to deploy

JavaScript



Flex



...10,000+ downloads!

Demonstration



Summary

- Responsive – **caching, optimized map service**
- Well designed – **map templates, sample viewer**
- Focused – **community resource center**

Request Service

Customer Self Service Portal

This site allows you to submit a service request for assistance in your area. Please enter an address or intersection above or click directly on the map to locate the area you'd like to report. Fill out the form below and click Submit to process your service request. A service request number will be issued immediately; please take note of this number in order to track the status of your request.

Connecting Up by Phone

Customer Service
Hours: 8 am - 4 pm
888-888-1232

Request Online

Type of Request:

Description/Comments:

To be contacted, please fill in the following:

Your Name:

Phone Number:

E-mail Address:

Training options

www.esri.com/training

- **Free Web-based training seminars**

- *Authoring and Deploying Fast Web Maps*
- *Getting started with Map Templates*
- *Implementing and Optimizing ArcGIS Server Map Caches*
- *Building Rich Internet Applications with ArcGIS API for Flex*
- *Building Mashups using the ArcGIS JavaScript APIs*

- **Instructor-led training courses**

- *Introduction to ArcGIS Server*
- *ArcGIS Server: Web Administration Using the Microsoft .NET Framework*
- *Building Web Maps Using the ArcGIS API for JavaScript*

Questions?

Thank you

